

⁽¹²⁾ UK Patent Application ⁽¹⁹⁾ GB ⁽¹¹⁾ 2 353 080 ⁽¹³⁾ A

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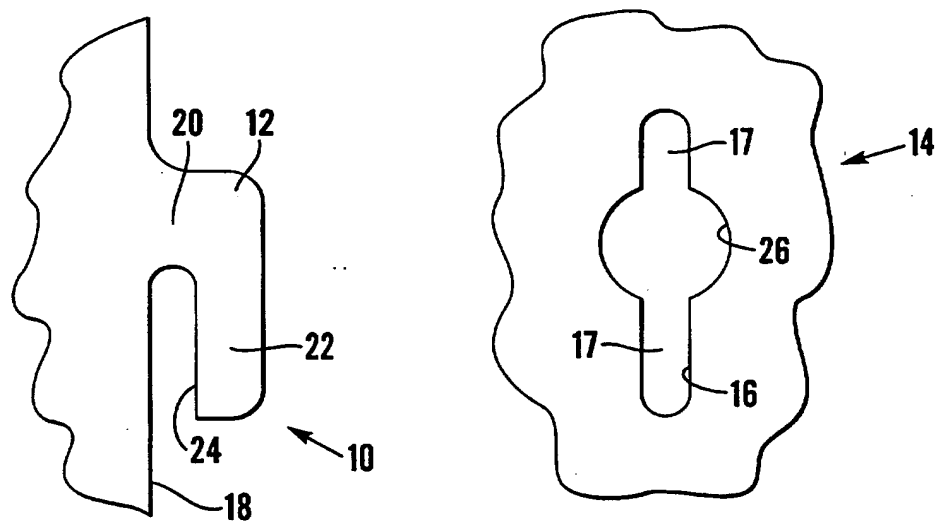


Fig. 1

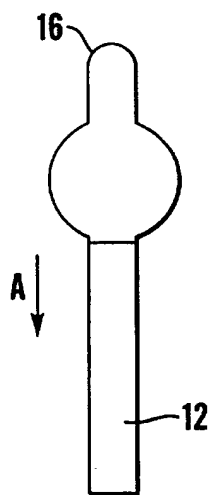


Fig. 2A

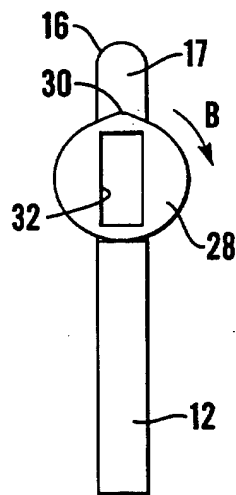


Fig. 2B

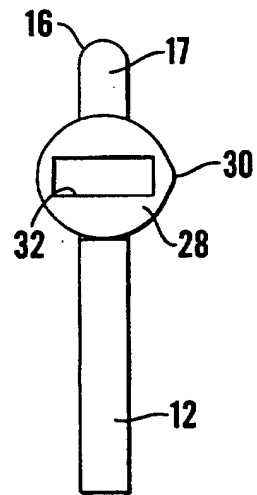


Fig. 2C

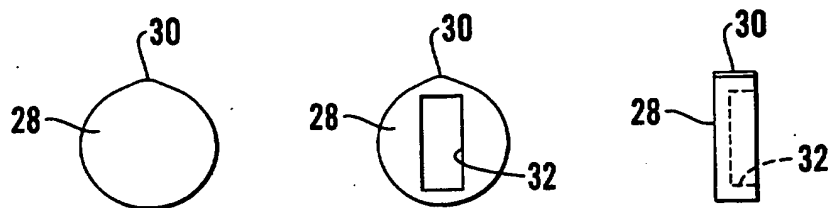


Fig. 3

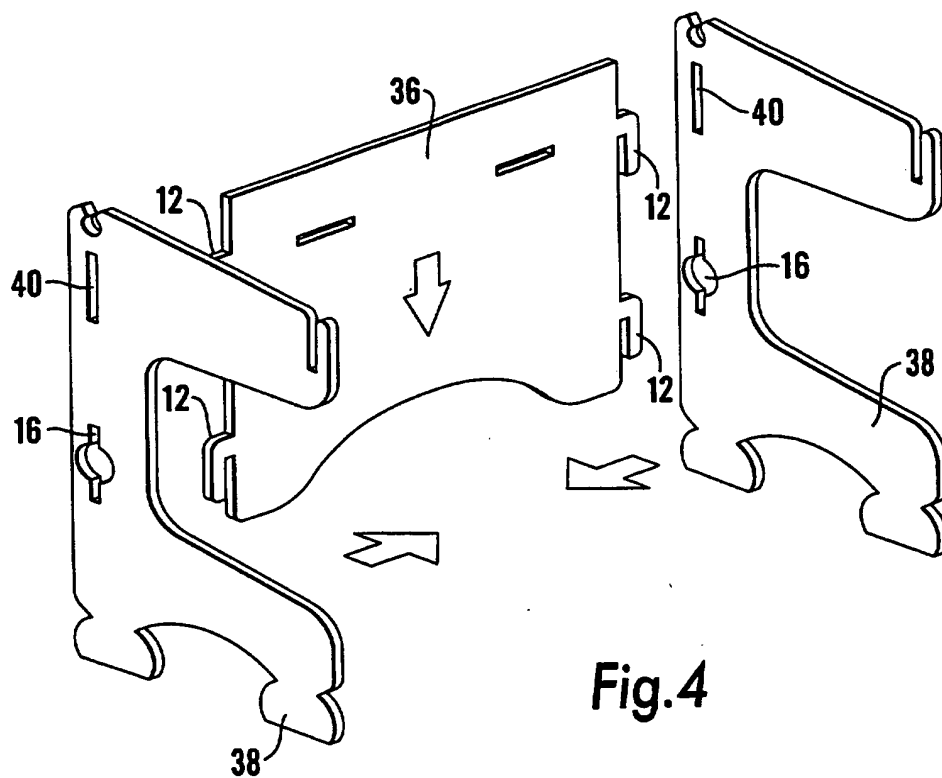
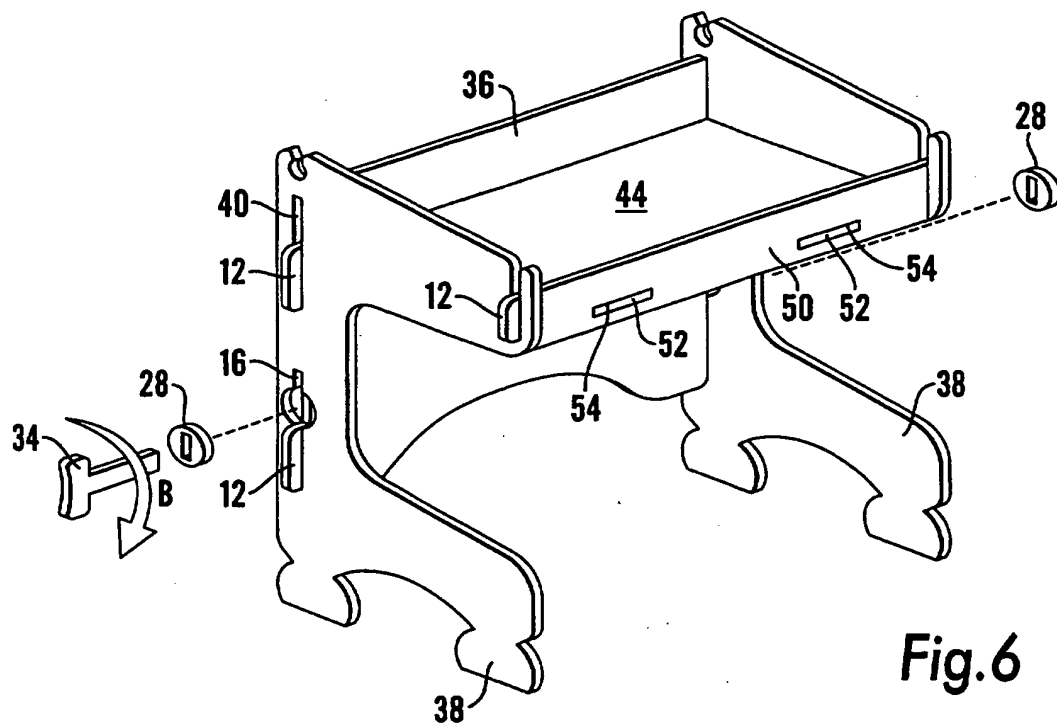
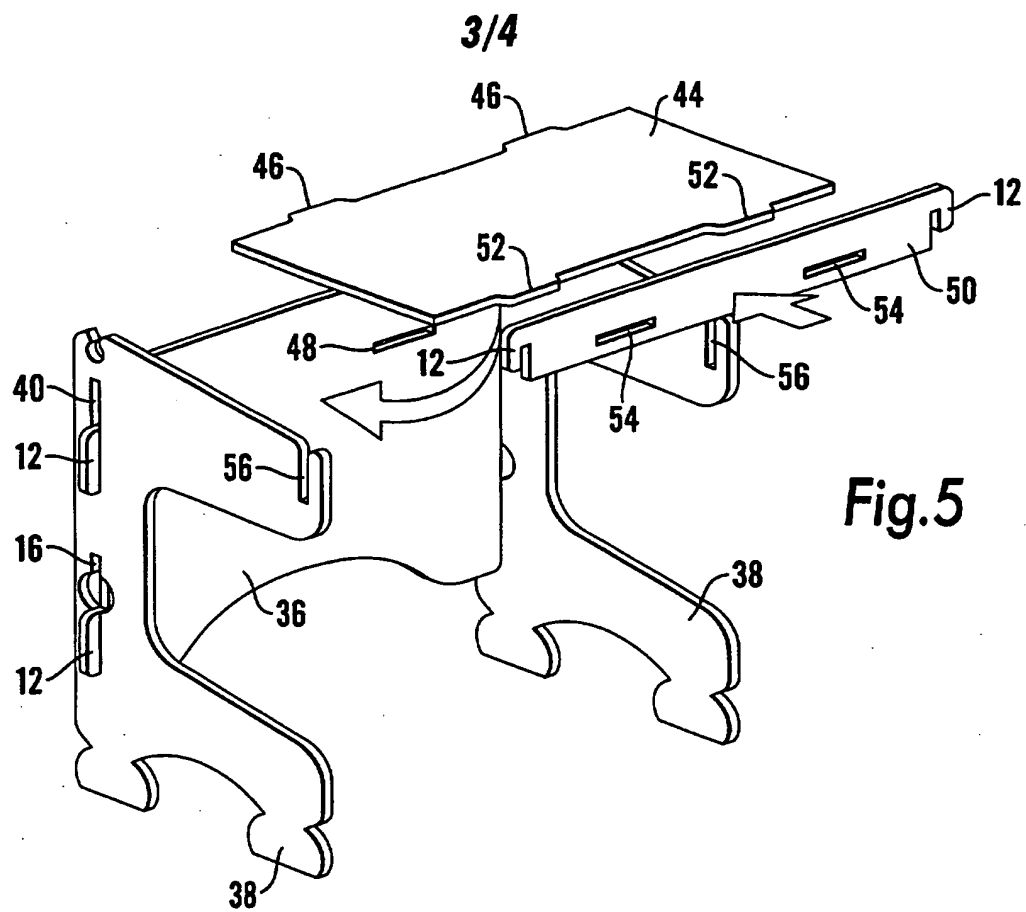


Fig. 4



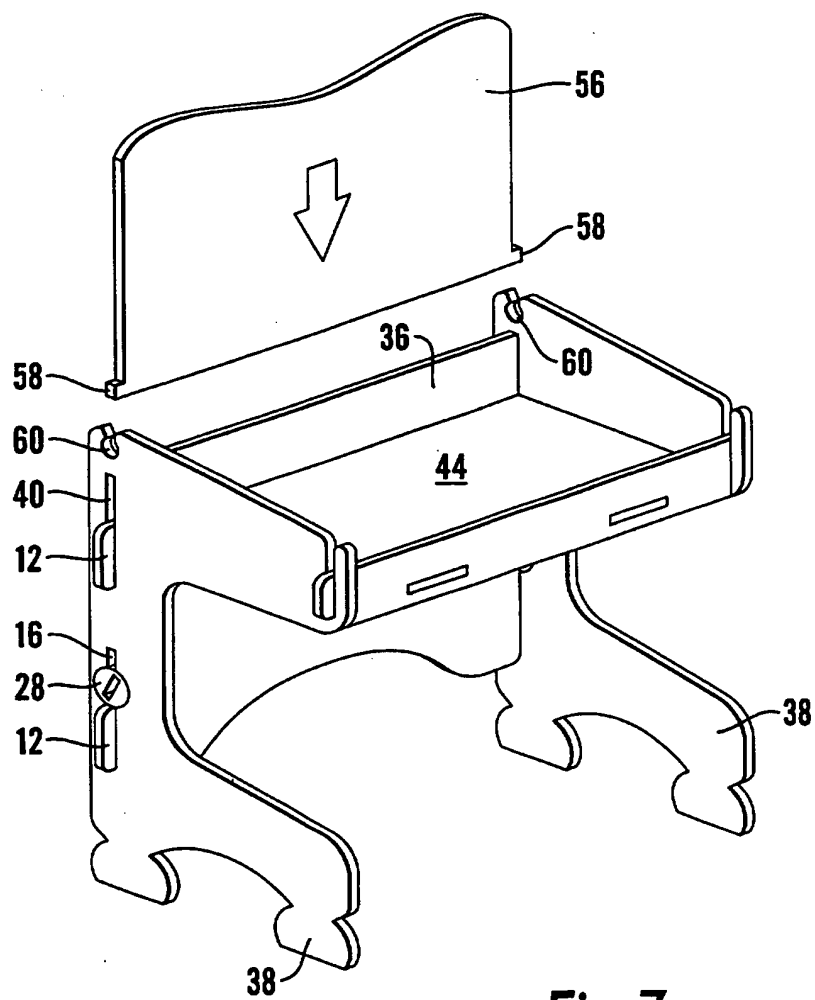


Fig.7

TITLE: JOINT

The present invention relates to a joint, and more particularly but not exclusively to a furniture joint for use in the assembly of childrens miniature furniture, otherwise known as jigsaw furniture.

5 Jigsaw furniture is supplied in flat-pack fit form and provides a child with a learning exercise in the assembly of the kit from a set of simple instructions. Each kit includes the component parts for constructing, for example, a chair, a desk, a wardrobe, a bedside cabinet, a toy box, or a bed. The assembled kits are demountable, which enables one or more children to benefit from the learning experience provided by each kit.

10 Up to now, the joints used in jigsaw furniture have been of the "hook and slot" type, as can typically be seen from Figure 10 of US patent No. 4,509,794. This patent relates to a "knock-down chair made from an assembly of interlocking planar panels". However, these joints have a tendency to come apart during assembly of the piece of furniture, and the stiffness of the assembled article of furniture is achieved by the "wedging" geometry of the furniture
15 panels, rather than by the hook and slot joints.

An alternative system has been proposed in US patent No. 4,140,065. As can best be seen from Figures 1 and 3 of this patent, a joint is made by inserting an apertured tongue 32 of a first panel 24, through an aperture 34 in a second panel 26, and locking the panels 24, 26 together by inserting a wedge in the apertured tongue 32. The second panel is therefore
20 secured between the first panel 24 and the wedge 38. This arrangement has the disadvantage that the apertured tongue has to be significantly larger than a simple hook as previously described, and the wedges can become accidentally displaced during or after assembly.

It is therefore an object of the invention to provide an improved joint, for use in the assembly of childrens jigsaw furniture, in which the aforementioned disadvantages of known joints are
25 substantially obviated.

According to the present invention there is provided a joint comprising first and second members, the first member having an aperture therethrough and the second member having a tongue, the tongue of the second member being insertable into the aperture of the first member, and a cam receivable, in the aperture adjacent the tongue, in use, rotation of the cam causing locking engagement of the cam and tongue in the aperture and releasably fastening the first and second members together.

Preferably, the aperture comprises a slotted portion, which opens into a substantially circular portion intermediate the ends of the slot. The tongue is preferably hook shaped, and is a snug fit in the width of the slot.

10 It is preferable that the cam is formed with a slotted recess for receiving a driving tool.

According to a further aspect of the present invention there is provided a method of forming a joint, comprising the steps of passing a tongue of a first member into an aperture of a second member, inserting a cam in the aperture adjacent the tongue, and rotating the cam to bring the cam into locking engagement with the tongue and the side walls of the aperture, thereby releasably fastening the first and second members together.

The invention will now be described further by way of example only with reference to the accompanying drawings in which:

Figure 1 shows a side elevation of a first member having a hook shaped tongue, and a plan view of a second member having an aperture therethrough;

Figures 2A, 2B and 2C show the sequence of steps required in the assembly of a joint according to the invention; in particular

Figure 2A shows the tongue of Figure 1 inserted in the aperture of Figure 1;

25 Figure 2B shows a cam inserted in the aperture with the tongue; and

- Figure 2C shows the cam rotated within the aperture to the locking position;
- Figure 3 shows rear, front and side elevations of the cam of Figures 2B and 2C;
- 5 Figure 4 shows the first stage in the assembly of a desk incorporating a furniture joint according to the invention;
- Figure 5 shows the second stage of the assembly of the desk of Figure 4;
- Figure 6 shows the insertion of the cams in the assembly of the desk of
10 Figures 4 and 5; and
- Figure 7 shows the final assembled desk with the cams in the locking position.

A first member is generally indicated at 10 and has a tongue 12, and a second member is generally indicated at 14 and has a through aperture 16. The tongue 12 is hooked shaped and
15 extends from a straight edge 18 of the member 10 in a neck portion 20. The neck portion 20 extends into a tip portion 22 which forms the hook. An inside edge 24 of the tip portion 22 is parallel with and spaced from the edge 18 of the member 10.

The aperture 16 comprises a slotted portion 17 which opens into a circular portion 26 at a position intermediate at the ends of the slot. A generally circular cam 28, see Figure 3, is
20 sized to fit within the circular portion 26 of the aperture 16. The cam 28 has a locking rib 30 extending from the periphery of the cam, and has an elongate slot 32 in one side of the cam for receiving the blade of a tool 34, see Figure 6.

Referring now to Figures 2A, 2B and 2C, the steps in the assembly of a joint will now be

described. With particular reference to Figure 1, when the first and second members 10, 14 are to be joined together, the hook shaped tongue 12 of the first member 10 is passed into the aperture 16 of the second member 14, until the edge 18 of the member 10 contacts the surface of the member 14. The width of the tongue 12 is a snug fit in the slotted portion 17. The tongue 12 is then slid downwards in the aperture 16, as indicated by arrow A, until the neck portion 20 is accommodated in part of the slotted portion 17 on one side of the circular portion 26 of the aperture. The sides of the member 14 are a snug fit between the edge 18 of the member 10, and the inside edge 24 of the tip portion 22.

As shown in Figure 2B, the cam 28 is then inserted into the circular portion 26 of the aperture 16, with the rib 30 located in the open part of the slotted portion 17. The cam 28 is in contact with the neck portion 20 of the tongue 12. The tool 34, Figure 6, is engaged in the slot 32 and the cam 28 rotated, as shown by arrow B, to the position shown in Figure 2C. The rib 30 is forced into engagement with the side wall of the aperture 16 and consequently locks the cam 28 and the neck portion 20 of the tongue 12 in the aperture. The members 10 and 14 are locked together in a joint. The joint is released by reverse rotation of the cam back to the position shown in Figure 2B.

The assembly of a child's jigsaw furniture desk will now be described with reference to Figures 4 to 7. The same reference numerals have been used for parts in common with the parts in Figures 1 to 3.

A desk back panel 36 is formed with upper and lower hook shaped tongues 12 at either end. A pair of side panels 38 are each provided with a conventional slot 40 and an aperture 16 for receiving the tongues 12 in known manner.

When the tongues 12 are located in their respective slots 40 and apertures 16, Figure 5, a base panel 44 locates in the back panel 36 by means of simple tongues 46 and slots 48. A front rail 50 also engages the base panel 44 with tongues 52 and slots 54, and has hook shaped tongues 12 at its ends. These hooked shaped tongues 12 engage respective slots 56 cut in the side panels 38. The base panel 44 is therefore firmly located between the back panel 36,

front rail 50 and end panels 36, as seen in Figure 6.

At this stage, cams 28 are inserted into the aperture 16 in the side panels 38, and are rotated by means of the tool 34, as previously described. The back panel 36 is thereby locked to the side panels 38, see Figure 7.

- 5 Finally, a lid 56 is mounted for pivoting movement on the side panels 38 by means of hinge pins 58 integral with the lid 56 which locate in cut-outs 60 provided in the side walls 38.

CLAIMS

1. A joint comprises first and second members, the first member having an aperture therethrough and the second member having a tongue, the tongue of the second member being insertable into the aperture of the first member, and a cam receivable
5 in the aperture adjacent the tongue, in use, rotation of the cam causing locking engagement of the cam and tongue in the aperture and releasably fastening the first and second members together.
2. A joint as claimed in claim 1, in which the aperture comprises a slotted portion which opens into a substantially circular portion intermediate the ends of the slot.
- 10 3. A joint as claimed in claim 2, in which the tongue is a snug fit in the width of the slot.
4. A joint as claimed in claim 1 in which the tongue is substantially hook shaped.
5. A method of forming a joint comprising the steps of passing a tongue of a first member into an aperture of a second member, inserting a cam in the aperture adjacent the tongue, and rotating the cam to bring the cam into locking engagement with the
15 tongue and the side walls of the aperture, thereby releasably fastening the first and second members together.
6. A joint substantially as claimed herein with reference to and as illustrated in Figures 1, 2A, 2B, 2C and 3 to 7 of the accompanying drawings.
7. A method of forming a joint substantially as described herein with reference to and
20 as illustrated in Figures 1, 2A, 2B, 2C and 3 to 7 of the accompanying drawings.



Application No: GB 0015159.7
Claims searched: 1 - 7

Examiner: Peter Macey
Date of search: 4 December 2000

Patents Act 1977
Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:
UK Cl (Ed.R): F2M (MB2, MB5), A4L (LSD)
Int Cl (Ed.7): F16B 12/10, 12/20, 12/32
Other: Online: WPI, EPODOC, JAPIO

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
X	GB 2119052 A (GANNER) see figure 1	1, 5

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.